

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Wataru MATSUMOTO

Application No.: 10/518,444

Confirmation No.: 7790

Filed: December 20, 2004

Art Unit: 2133

For: METHOD AND APPARATUS FOR  
GENERATING CHECK MATRIX

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Examiner: S. W. Rizk

**INFORMATION DISCLOSURE STATEMENT**  
**(SUBMISSION AFTER FILING OF AN APPLICATION BUT BEFORE FINAL**  
**REJECTION OR NOTICE OF ALLOWANCE OR CONCURRENTLY WITH A RULE**  
**1.114 RCE APPLICATION)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO-SB08(s), attached hereto.

II. COPIES

- ☒ a. Copies of cited U.S. patents and patent application publications are not included.  
Copies of foreign patent documents and non-patent literature are included.

☐ b. Some or all of the documents listed on the PTO-SB08 are not enclosed because they were cited in the International Search Report and copies should already be in the PTO file. If copies are needed, please contact the undersigned.

☐ c. REFERENCES PREVIOUSLY CITED OR SUBMITTED - Pursuant to 37 C.F.R. §1.98(d), consideration of information listed on the PTO-SB08 form(s) is requested since any patents, publications, or other information which are listed on the PTO-SB08 form(s) but for which copies are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

### III. CONCISE EXPLANATION OF THE RELEVANCE

(check at least one box)

☒ a. DOCUMENTS IN THE ENGLISH LANGUAGE - The patents, publications, or other information listed on the attached PTO SB08 are in the English language and therefore, do not require a statement of relevancy.

☐ b. DOCUMENTS NOT IN THE ENGLISH LANGUAGE - A concise explanation of the relevance of all patents, publications, or other information listed that is not in the English language is as follows:

☐ c. ENGLISH LANGUAGE SEARCH REPORT - An English language version of the search report or action that indicates the degree of relevance found by the foreign office is attached, thereby satisfying the requirement for a concise explanation. See MPEP 609(III)(A)(3).

☒ d. OTHER - The following additional information is provided for the Examiner's consideration. A copy of the European Search Report mailed February 14, 2007 is attached herewith.

IV. FEES (check one box)

☐ a. This Information Disclosure Statement is being filed concurrently with the filing of a new patent application; therefore, no fee is required.

☐ b. This Information Disclosure Statement is being filed concurrent with the filing of a continuation-in-part, continuation, or divisional patent application; therefore, no fee is required

☐ c. This Information Disclosure Statement is being filed within three months of the filing date of a national application (37 C.F.R. § 1.97(b)(1)). No fee or statement is required. *(This section is not to be used with RCE's.)*

☐ d. This Information Disclosure Statement is being filed within three months of the date of entry of the national stage as set forth in § 1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or statement is required.

☐ e. This Information Disclosure Statement is being filed concurrently with the filing of a Request for Continued Examination under § 1.114 (37 C.F.R. § 1.97(b)(4)). No fee or statement is required.

☐ f. This Information Disclosure Statement is being filed before the mailing date of a first Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or statement is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the statement under 37 C.F.R. § 1.97(e) below, or, if no statement has been made, charge our deposit account for the fee as required by 37 C.F.R. § 1.17(p).

☒ g. This Information Disclosure Statement is being filed before the mailing date of a Final Office Action under 37 C.F.R. § 1.113 (See 37 C.F.R. § 1.97(c)(1)) or before the mailing date of a Notice of Allowance under 37 C.F.R. § 1.311 (See 37 C.F.R. § 1.97(c)(2)).

☐ No statement; therefore, a fee as required by 37 C.F.R. § 1.17(p) is attached.

or

☒ See the statement below. No fee is required.

V. STATEMENT UNDER 37 C.F.R. § 1.97(e)

(check only one box)

The undersigned hereby states that:

☐ a. Each item of information contained in the IDS was first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than 30 days prior to the filing of this IDS; or

☒ b. Each item of information contained in the IDS was first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS; or

☐ c. No item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of the IDS.

☐ d. Some of the items of information were cited in a communication from a foreign Patent Office. As to this information, the undersigned states that each item of information contained in the IDS was first cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby states that no item of this remaining information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application and, to the best of my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement.

VI. PAYMENT OF FEES (check one box)

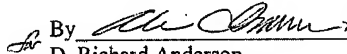
- ☐ The required fee is listed on the attached Fee Transmittal.
- ☒ No fee is required.

If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule and charge the appropriate fee to Deposit Account No. 02-2448.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Dated: April 13, 2007

Respectfully submitted,

By  # 58,755  
D. Richard Anderson  
Registration No.: 40,439  
BIRCH, STEWART, KOLASCH & BIRCH, LLP  
8110 Gatehouse Road  
Suite 100 East  
P.O. Box 747  
Falls Church, Virginia 22040-0747  
(703) 205-8000  
Attorney for Applicant

Attachment(s):

- ☒ PTO-SB08  
☒ Documents  
☒ Foreign Search Report  
☐ Fee  
☐ Other:

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	10/518,444-Conf. #7790
				Filing Date	December 20, 2004
				First Named Inventor	Wataru MATSUMOTO
				Art Unit	2133
				Examiner Name	S. W. Rizk
Sheet	1	of	2	Attorney Docket Number	2611-0228PUS1

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)	MM-DD-YYYY		

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	1 <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)	MM-DD-YYYY			

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document by the two-letter code (WIPO Standard ST 3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Examiner Signature		Date Considered	
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Substitute for form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>		<b>Complete if Known</b>			
		Application Number	10/518,444-Conf. #7790		
		Filing Date	December 20, 2004		
		First Named Inventor	Wataru MATSUMOTO		
		Art Unit	2133		
		Examiner Name	S. W. Rizk		
Sheet	2	of	2	Attorney Docket Number	2611-0228PUS1

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>	
	CA	MATSUMOTO W ET AL: "Deterministic irregular low-density parity-check codes design scheme" PROC , KISO KYOKAI SOCIETY MEETING. vol A-6-12, 10 September 2002 (2002-09-10), page 126, XP002903378		
	CB	ROSENTHAL J ET AL: "Constructions of regular and irregular LDPC codes using Ramanujan graphs and ideas from margulis" PROC , IEEE INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY, ISIT 2001, WASHINGTON, WA, US, 24 June 2001 (2001-06-29) page 4, XP010552621 ISBN 0-7803-7123-2		
	CC	VONTOBEL P O ET AL: "Irregular codes from regular graphs" PROC , IEEE INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY, ISIT 02, LAUSANNA, SWITZERLAND, 30 June 2002 (2002-06-30), - 5 July 2002 (2002-07-05) page 284, XP010601995 ISBN 0-7803-7501-7		
	CD	CHIANI M ET AL: "Design and performance evaluation of some high-rate irregular low-density parity-check codes" PROC , IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE, GLOBECOM 2001, SAN ANTONIO, TX, vol VOL 2 of 6, 25 November 2001 (2001-11-29) pages 990-994, XP001099253 ISBN 0-7803-7206-9		
	CE	LUBY M G ET AL: "Analysis of low density codes and improved designs using irregular graphs" PROC , 30TH ANNUAL ACM SYMPOSIUM ON THE THEORY OF COMPUTING DALLAS, TX, 23 May 1998 (1998-05-23), pages 249-258, XP000970907 ISBN 0-89791-962-9		
	CF	LUBY M G ET AL: "Improved Low-Density Parity-Check Codes Using Irregular Graphs" IEEE TRANSACTIONS ON INFORMATION THEORY, vol. 47, No. 2, February 2001 (2001-02), XP011027875 ISSN 0018-9448		
	CG	YU KUO ET AL: "Low-Density Parity-Check Codes Based on Finite Geometries: A Rediscovery and New Results" IEEE TRANSACTIONS ON INFORMATION THEORY, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol 47, No. 7, November 2001 (2001-11), XP011028087 ISSN 0018-9448		
	CH	ROSENTHAL J AND VONTOBEL P O: "Constructions of LDPC codes using Ramanujan graphs and ideas from Margulis" PROC , 38TH ALLERTON CONFERENCE ON COMMUNICATION, CONTROL AND COMPUTING, ALLERTON HOUSE, MONTICELLO, ILLINOIS, 4 October 2000 (200-10-04), - 6 October 2000 (2000-10-06) pages 1-10, XP002416895 Retrieved from the Internet: URL: <a href="http://www.hpl.hp.com/personal/Pascal_Vontobel/publications/papers/pcto-00-3.pdf">http://www.hpl.hp.com/personal/Pascal_Vontobel/publications/papers/pcto-00-3.pdf</a>		
	CI	MATSUMOTO W ET AL: "Irregular extended Euclidean geometry low-density parity-check codes" PROC , INTERNATIONAL SYMPOSIUM ON COMMUNICATION SYSTEMS NETWORKS AND DIGITAL SIGNAL PROCESSING, CSNDSP 2002, STAFFORD, UK, 15 July 2002 (2002-07-15), pages 148-151, XP002370884		
	CJ	CHUNG, S Y ET AL: "Analysis of Sum-Product Decoding of Low-Density Parity-Check Codes Using a Gaussian Approximation" IEEE TRANSACTIONS ON INFORMATION THEORY, vol 47, no. 2, February 2001 (2001-02), pages 657-670, XP011027864 ISSN 0018-9448		

<sup>1</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609 Draw line through citation if not in conformance and not considered Include copy of this form with next communication to applicant

<sup>2</sup>Applicant's unique citation designation number (optional) <sup>3</sup>Applicant is to place a check mark here if English language Translation is attached

Examiner Signature	Date Considered
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